

WHAT IS CLAIMED IS:

1. A simulator for verifying the functionality of an electrical product safety tester, said simulator comprising:

5 a plurality of electrical input/output terminals for connection to a plurality of test terminals on said electrical product safety tester;

a first test path comprising a high voltage input from a first of said plurality of terminals, a first switch, an air gap device designed to arc over at a specific high level voltage, and a second terminal of said plurality of terminals.

10 2. The simulator of Claim 1, further comprising a second test path comprising said high voltage input, a second switch, and said second terminal.

3. The simulator of Claim 1, further comprising a third test path comprising an input terminal from a third of said plurality of terminals, a third switch, and said second terminal;

15 4. The simulator of Claim 1, wherein said air gap device is designed to arc over at about 750V.

5. The simulator of Claim 1, wherein said air gap device is an engine spark plug.

6. The simulator of Claim 1, wherein said simulator is portable.

7. The simulator of Claim 1, further comprising an arc view window.

20 8. The simulator of Claim 2, further comprising in said second test path a first impedance element in series with said second switch, and a second impedance element in parallel with said series connection of said second switch and said first impedance element.

25 9. The simulator of Claim 3, further comprising in said third test path a first resistor in parallel with said third switch, and a second resistor in series with said parallel connection of said first resistor and said third switch.

30 10. A method of verifying the operation of hipot testers, comprising:
connecting a plurality of test terminals of said hipot/ground continuity tester to a plurality of test terminals of a simulator, wherein said plurality of test terminals comprise a hipot terminal, and a return terminal;

setting a plurality of switches on said simulator to a 'PASS' position,
said plurality of switches comprising a hipot switch;

conducting a 'PASSING' test by starting said tester, said 'PASSING'
test comprising supplying a high voltage input between said hipot terminal and
said return terminal of said simulator, wherein said 'PASS' position for said
hipot switch is open, thereby producing an open circuit condition between said
hipot terminal and said return terminal;

verifying a 'PASS' condition on said tester for said 'PASSING' test;

conducting a hipot failure test by setting said hipot switch on said
simulator to a 'FAIL' position and initiating said hipot test by starting said hipot
tester, wherein said 'FAIL' position for said hipot switch is closed, thereby
allowing said high voltage input across an air-gap device designed to break
down at approximately the level of said high voltage input;

verifying a 'FAIL' condition on said tester for said hipot failure test.

11. The method of Claim 10, further comprising conducting an excess
leakage test by setting said leakage switch on said simulator to a 'FAIL' position and
initiating said excess leakage test by starting said hipot tester, wherein said 'FAIL'
position for said leakage switch is closed, thereby producing a short circuit condition
across said hipot terminal and said return terminal, and verifying a 'FAIL' condition on
said tester for said excess leakage test.

12. The method of Claim 10, further comprising conducting a ground open
test by setting a ground switch on said simulator to a 'FAIL' position and initiating said
ground open test by starting said hipot tester, wherein said plurality of terminals
includes a chassis terminal, and wherein said 'FAIL' position for said ground switch is
open, thereby producing an open circuit condition to said chassis terminal and said
return terminal, and verifying a 'FAIL' condition on said tester for said ground open
test.

13. An operation verification method of a hipot/ground continuity tester,
comprising:

connecting a plurality of test terminals of said hipot/ground continuity tester to a plurality of test terminals of a simulator, wherein said plurality of test terminals comprise a hipot terminal, a return terminal, and a chassis terminal;

5 setting a plurality of switches on said simulator to a 'PASS' position, said plurality of switches comprising a hipot switch, and ground switch;

10 conducting a 'PASSING' test by starting said tester, said 'PASSING' test comprising supplying a high voltage input between said hipot terminal and said return terminal of said simulator, and a current to said chassis terminal, wherein said 'PASS' position for said hipot switch is open, thereby producing an open circuit condition between said hipot terminal and said return terminal, and wherein said 'PASS' position for said ground switch is closed, thereby producing a short circuit condition between said chassis terminal and said return terminal;

15 verifying a 'PASS' condition on said tester for said 'PASSING' test;

15 conducting a hipot failure test by setting said hipot switch on said simulator to a 'FAIL' position and initiating said hipot test by starting said hipot tester, wherein said 'FAIL' position for said hipot switch is closed, thereby allowing said high voltage input across an air-gap device designed to break down at approximately the level of said high voltage input;

20 verifying a 'FAIL' condition on said tester for said hipot failure test;

25 conducting a ground open test by setting said ground switch on said simulator to a 'FAIL' position and initiating said ground open test by starting said hipot tester, wherein said 'FAIL' position for said ground switch is open, thereby producing an open circuit condition to said chassis terminal and said return terminal;

 verifying a 'FAIL' condition on said tester for said ground open test.

14. A method of testing functionality of a production line dielectric withstand tester comprising connecting said production line dielectric withstand tester to a product simulator, said product simulator being configurable to emulate either a
30 passing product or a failing product.

15. The method of Claim 14, additionally comprising viewing an arc produced inside said product simulator.

5 16. A product simulator comprising a housing, an arc view window, and at least one switch, wherein an operator can view the break down of an air gap device through said arc view window, and wherein said switch is configured to alter a test path in said product simulator so as to alternatively simulate a product that passes a production line dielectric test and a product that fails a production line dielectric test

10 17. The simulator of Claim 16, further comprising a second switch, wherein said second switch is configured to alter a second test path in said product simulator so as to alternatively simulate a product that passes a production line ground continuity test and a product that fails a production line ground continuity test.

15 18. The simulator of Claim 16, further comprising a second switch, wherein said second switch is configured to alter a second test path in said product simulator so as to alternatively simulate a product that passes a production line leakage current test and a product that fails a production line leakage current test.